Aurora Data Center Fact Sheet

Based on information available in April 2026.

Background

The purpose of this fact sheet is to provide information and a general understanding regarding data centers, particularly focusing on water usage in Aurora. Data centers are becoming more prevalent due to the Artificial Intelligence (AI) boom and understanding their impact will become imperative for future development.

Executive Summary

Data centers are rapidly expanding due to increased demand from artificial intelligence, cloud computing, and digital services. As this growth continues, understanding their impacts on water and energy systems—particularly in Aurora—is critical for informed planning and resource management.

In Aurora, data centers currently represent a relatively small share of total water demand, accounting for approximately **0.32% of system-wide monthly water use**. This is significantly lower than the city's largest individual water users, of which the top three users average **2.7%**. Future impacts will depend primarily on the **types of cooling systems** they employ.

Energy use is also a growing concern. Globally, data centers consumed about 1.5% of total electricity in 2024, with demand expected to more than double by 2030. In the U.S., data centers are projected to drive nearly half of total electricity demand growth this decade. Efficiency is commonly measured using Power Usage Effectiveness (PUE), where lower values indicate better performance; modern facilities aim for a PUE near 1.2.

Emerging technologies—such as warm-water liquid cooling systems—have the potential to further reduce energy consumption by 20–30% and may accelerate a shift toward lower-water cooling strategies.

Overall, while current water impacts in Aurora are modest, **cooling technology choices will be the key determinant of future water resource demands**. Aurora has not left these choices to chance; by implementing our Large Water User criteria we are requiring large water uses to include efficiency technologies.

New data centers in Aurora developed under the Large Water User criteria are using generally less than 500,000 gallons each per month. For comparison, an 18-hole golf course can use up to 1,000,000 gallons per day for irrigation during the summer. **Outdoor irrigation accounts for more than half (>50%) of Aurora's water use during the summer whereas currently data centers cumulatively account for less than one half percent (<0.5%).**

Definitions

- **Data Center** – Specialized facility for housing networked servers, computers, and networking infrastructure (IT equipment) necessary for digital services: cloud computing, AI models, streaming, banking, etc.
- **Power Usage Effectiveness (PUE)** – Industry standard power usage metric for data centers, measuring the power used to run the IT equipment (servers, networking, etc.) in relation to the necessary overhead power (cooling, lights, security). See Table 5 below.
- **Evaporative Cooling** – Sends warm water or air to a cooling tower or evaporative unit where a portion of water is intentionally evaporated, and that evaporation cools the remaining water or air before it is recirculated back to the data center. (Very high-water usage; is the most efficient energy spend).

- **Dry Cooling** – Uses a closed loop of fluid or air that carries heat from the data center to large outdoor radiators or air-cooled heat exchangers, where fans blow outside air over coils to exhaust the heat without using a cooling tower. (Very low water usage; requires between 5-20% additional energy).
- **Hybrid Cooling** – Uses controls and valves to switch between dry operation and evaporative operation, so the same system can run like a radiator in favorable weather and add evaporation only when conditions require extra cooling capacity. (50% less water and similar energy spend compared to evaporative).
- **Free Cooling** – Uses naturally cool outside temperatures, typically through air-side or water-side economizers, to remove heat so the system can meet cooling needs without relying on mechanical chillers or compressors.
- **Indoor Water Use** – Water used inside a facility for building operations: sinks, toilets, data center cooling units, and other process-related demands.
- **Outdoor Water Use** – Water used outside for landscape irrigation: watering grass, trees, etc.
- **Aurora Data Centers** - Approximately 0.32% of the total water use in Aurora Water system per month

Cooling Types

There are two broad process types for cooling a data center: Indoor and Outdoor.

- Indoor cooling relates to how the system cools the data halls and removes heat from the server racks.
- Outdoor details how the heat from server racks is then exhausted from the system. Within each step, there are multiple approaches to achieve the desired effect.

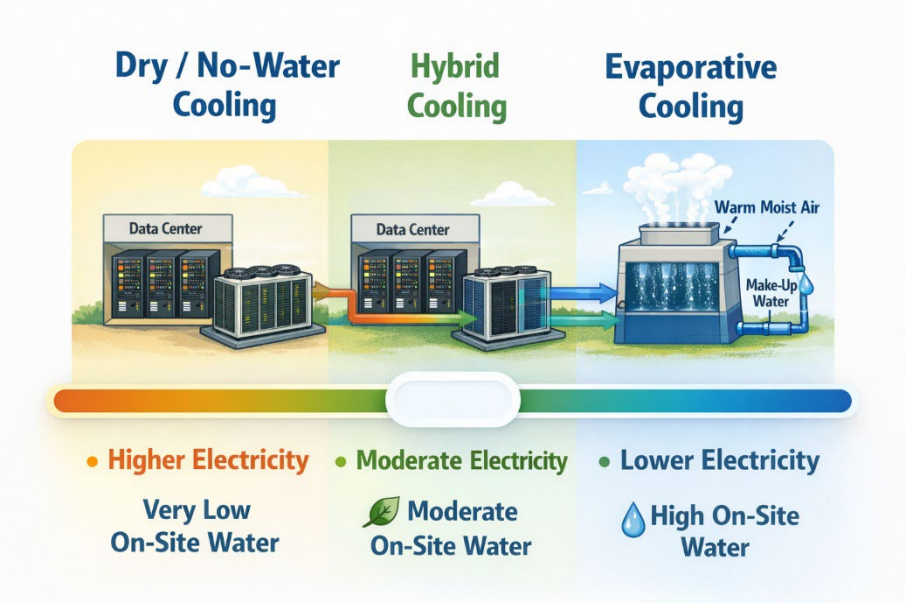
1. Indoor – how heat is removed from the server racks

- **Air Cooling**
  - Think traditional air conditioning, with “cool” and “hot” aisles ushering cool air to server racks and warm air out to exhaust
- **Liquid / Direct to Chip (DTC)**
  - Chips and processors are cooled by direct contact with air or water/glycol-filled lines (antifreeze) circulating in a loop between servers and air-cooled chillers/radiators

2. Outdoor – how the system exhausts heat pulled from the server racks

- **Dry cooling**:
  - More electricity, very low water use
  - Closed-loop system carries heat to outdoor radiators/chillers
  - One-time system fill with water, no need to replenish
- **Hybrid**: mix of dry cooling and evaporative
  - Moderate electricity, moderate water use
  - Mostly dry cooling, switches to evaporative cooling on hot days
- **Evaporative cooling**:
  - Less electricity, high water use
  - Uses cooling/evaporative towers to cool
  - Must continually replenish evaporated water with new water

All three outdoor methods can capitalize on **"free cooling"** when weather permits. Free cooling utilizes the cooler outside air temperatures to temporarily take the place of the power intensive chillers/compressors. Combined with the relatively dry air, these cooler temperatures in the fall, winter, and spring make the Colorado region appealing to data centers looking to take advantage of lower energy requirements.



Water Usage

Water usage at data centers largely depends upon whether a dry or evaporative system is used for its outdoor heat exhaust. **Evaporative cooling** uses large amounts of water, as it must replenish the water it loses due to evaporation in heat rejection. **Dry cooling** requires relatively no water, as it is a closed loop system that depends on air chillers and compressors instead of evaporation to reject heat.

Data Centers in Aurora

There are currently nine known data centers in the City of Aurora, with an additional five in various stages of development. Based on the 2025 monthly usage data, all nine active data centers combined make up approximately **0.32%** of the total water used system-wide on average each month. As a comparison, Aurora's top three water users averaged **2.7%** of the total monthly water used in 2025.

This table shows the cumulative water use of the data centers compared to the top three users' cumulative use

2025 Avg. Monthly Use			
	Data Centers (9)	**Top 3 Users**	**Overall System Use**
Mgal	**4.6**	**38.9**	**1,424**
GPD / Acre	**15,447**	**36,479**	

Power Usage

In 2024 the International Energy Agency (IEA) estimated that data centers consumed 415 TWh of electricity, which is approximately 1.5% of the global electricity used. For scale, 415 TWh of electricity can power ~38 million homes for one year. In a 2025 report, the IEA projected the global data center electricity demand to double to 945 TWh by 2030. In the United States, data centers are expected to account for nearly one-half of the total electricity growth demand through 2030.

Cooling systems can account for 30-50% of total energy use in data centers, and the type of cooling system will affect how much power it uses. Fully dry-cooling systems face an energy penalty between 5-20% when compared to fully evaporative systems. Hybrid systems that utilize dry cooling, free cooling, and evaporative cooling at peak heat can boast very similar energy efficiency while reducing water use by 30-70% as compared to evaporative cooling alone.

Upcoming Innovation: In January 2026, Nvidia announced supercomputers that can be cooled with **45 °C** (113 °F) supply water using warm-water direct liquid cooling, compared with today's liquid-cooled systems that typically supply temperatures around **30–35 °C**. Running at this higher temperature may eliminate the need for traditional water chillers in many climates and instead allow **ambient-air/"free-cooling"** for much of the year, sharply reducing compressor and chiller energy use. Industry analysts suggest that this innovation may cut cooling-related energy consumption on the order of 20–30% and is expected to accelerate the shift toward dry-cooling architectures.

Summary

Data centers are a rapidly growing industry that can drive large water and power demands. In the City of Aurora, data centers represent approximately 0.32% of system-wide monthly water use, as compared to approximately 2.7% for the city's three largest water users combined.

By implementing our Large Water User criteria, new data centers in Aurora will never create large water demands from cooling systems using fully evaporative cooling. Data centers in Aurora are required to implement technology such as dry and/or hybrid cooling systems that are significantly more water efficient. Therefore, new data centers will not become a burden on Aurora's water system and supply. Additionally, Aurora's water distribution and sewer collection systems will not need to accommodate the large peak flows associated with use of large evaporative cooling systems.

Large Water Users Guide

		Non-Recoverable Use			
		≤25%	26% - 50%	51% - 75%	76% - 100%
Volumetric Use (Avg gal/acre/day)	≤600	Allowed - Low Volumetric Use Low Non-Recoverable	Allowed - Low Volumetric Use Low Non-Recoverable	Allowed - Low Volumetric Use/ Moderate Non-Recoverable	Allowed - Low Volumetric Use/ High Non-Recoverable
	601-1,000	Allowed - Low Volumetric Use Low Non-Recoverable	Allowed - Low Volumetric Use Low Non-Recoverable	Allowed - Low Volumetric Use/ Moderate Non-Recoverable	Allowed - Low Volumetric Use/ High Non-Recoverable
	1,001 - 2,000	Allowed - Avg Volumetric Use/ Low Non-Recoverable	Allowed - Avg Volumetric Use/ Low Non-Recoverable	Allowed - Avg Volumetric Use/ Moderate Non-Recoverable	Allowed - Avg Volumetric Use/ High Non-Recoverable
	2,001 - 2,500	Allowed - Avg Volumetric Use/ Low Non-Recoverable	Allowed - Avg Volumetric Use/ Low Non-Recoverable	Allowed - Avg Volumetric Use/ Moderate Non-Recoverable	Allowed Under Exemption Only
	2,501 - 3,000	Allowed - High Volumetric Use/ Low Non-Recoverable	Allowed - High Volumetric Use/ Low Non-Recoverable	Allowed Under Exemption Only	Not Allowed
	3,001 - 3,500	Allowed Under Exemption Only	Allowed Under Exemption Only	Not Allowed	Not Allowed
	3,501+	Allowed Under Exemption Only	Not Allowed	Not Allowed	Not Allowed